As regards the other matter referred to, Mr. Tittmann does not mention the publication in which "Mr. Chaney states that the standard air to which his result is reduced weighs 0·3077 grains per cubic inch." The only publication known to me is Mr. Chaney's paper in the Proceedings of the Royal Society, and it does not contain any such statement.

I have always been taught to regard a standard weight as a standard of mass, and therefore independent of such conditions as temperature, pressure, and the material in the other scale pan; whereas, it appears that Mr. Chaney, by direction of the Board of Trade, has made a determination which is only true for a particular density of the surrounding air, and a particular density of the weights in the other pan.

For scientific purposes a standard of reference should be free from variable elements, and should be of the utmost attainable simplicity. For commercial purposes determinations to six figures are frivolous.

Mr. Tittmann's reductions appear to contain two errors. Instead of adding the weight of a cubic inch of air, he ought to have added the difference between this and the weight of the air displaced by the weights in the opposite pan. Again, he takes the metre as 39·3700 inches, whereas Clarke's value is 39·370432, and Kater's 39·37079.

I have had some correspondence with Mr. Chaney since the publication of my new edition, and have had an erratum slip printed, which I trust you will allow me to subjoin, as it may be useful to several of your readers J. D. Everett.

5 Princess Gardens, Belfast, March 28.

Addenda and Corrigenda.

Page 63. In reducing Cailletet's experiments, ·000 0026 should have been added instead of ·000 0039.

Page 77. *Add*—Violle's determination of velocity of sound is $331 \cdot 10 \pm 0 \cdot 1$. *Ann. de Chim. XIX. March*, 1890.

Page 176, line 10. *For* Wuilleumeier, 1890, *read* Wuilleumier, 1890, Lippmann method.

At end of page 164, *add*—Expressing C in amperes, R in ohms, and T in seconds, the heating effect in gramme-degrees is $C^2RT/4 \cdot 2 = \cdot 24 C^2RT$.

Page 35. Mr. Chaney's determination here quoted was not intended as a determination of the *density* of water, but of the *apparent weight* of water when weighed in air of density ·001 216 84 against brass weights of density 8·143. The correcting factor for deducing the weight *in vacuo* or true density is 1·001 0687, which will change the value ·998 752 obtained in the text into ·999 82, to compare with Tralles' ·999 88.

Mr. Chaney's result is for distilled water deprived of air, and Tralles' appears to be for ordinary distilled water. According to results recently obtained by the Vienna Standards Commission (*Wied. Ann.*, 1891, Part 9, p. 171), water deprived of air has the greater density, the difference being ·000 0032 at 0° C., and ·000 0017 at 62° F. These differences are too small to affect the above comparison.

Influenza in America.

In my copy of "Johnson's Dictionary of the English Language in Miniature, to which are added an alphabetical account of the heathen deities and a copious chronological table of remarkable events, discoveries, and inventions, by the Rev. Joseph Hamilton, M.A., second American edition, Boston, 1806" (12mo, pp. 276), I find on p. 275, "Influenza in North America, 1647, 1655, 1697–98, 1732, 1737, 1747, 1756–57, 1761, 1772, 1781, 1789–90, 1802."

It is quite possible that these dates are well known, but they are new to me, and may be of interest in connection with the recent epidemic. Edward S. Holden.

Mount Hamilton, March 29.

DUST COUNTING ON BEN NEVIS.

Within the last few years quite a new factor has been introduced into the study of meteorology—namely, that which treats of the dust particles in the atmosphere, of the number of dust particles present in the air at any time, and the effect of dust in the air on climate and weather changes. It is now beginning to be recognized that the study of dust and its behaviour in the air forms the stepping-stone to the study of almost all meteorological problems which deal with clouds and precipitation, solar and terrestrial radiation, and in a general way with the diurnal and annual variations in the temperature and pressure of the atmosphere. Mr. Aitken's work in originating this branch of science, and in making and discussing numerous observations of the number of dust particles in the air of various places in this country, as well as on the Continent, at various altitudes, is pretty well known already (see Nature, vol. xli. p. 394). Mr. Aitken's results and conclusions were looked upon as being of such importance as to warrant some of our leading meteorologists to apply to the Research Fund of the Royal Society for a grant to enable them to equip the Ben Nevis Observatory with Aitken's dust-counting apparatus. The application was successful, and instruments were at once ordered, and in due time erected at the Observatory.

The apparatus consists of two dust counters, one a portable form for use in the open air, and the other a laboratory form for use inside the Observatory. The latter is fixed in the middle room of the tower, and has pipes leading out to the free air, so that it is possible to observe with it in almost all sorts of weather and at any hour day or night. The principle on which these instruments are constructed, so as to make the tiny invisible particles of dust visible and easily countable, is pretty well known already. Briefly it is this. To make the particles visible, the air containing them is saturated with water vapour, and by a stroke of an air-pump it is thereafter cooled so much as to cause a condensation of the vapour on the particles, whereby these are thus made visible. Ordinary air is so dusty that if the receiver were full of such air it would be impossible to count the particles, and to make them easily countable the following process is resorted to. First, the chamber or receiver, whose capacity is accurately known, is filled with pure dustless air by means of an air-pump and filter. Then a fifth, a tenth, or any other fractional part of the amount of pure air inside is taken out, and the same amount of dusty air allowed in. In this way the density of the shower caused by condensation is completely under the observer's control. A small graduated stage is placed one centimetre from the top of the receiver, so that all the dust above this falls on to it, and by means of a magnifying glass all the particles on one or more of the small squares of the stage are easily counted. Then, by multiplying by the reciprocals of the various fractions used we arrive at the number of dust particles in a unit of the free dusty air. In making an observation, the mean of ten such tests is taken as the number of particles present for that time.

Observations were begun at the Ben Nevis Observatory with the portable instrument in February 1890, and with the other instrument in the following summer. During the whole of that year the work done was mainly preliminary, as great difficulty was experienced in getting the dust work to fit into the general routine of Observatory work. The dust inquiry is not like some other special inquiries, that can be prosecuted for a certain time, and then discontinued after definite positive or negative conclusions thereanent have been arrived at, but must, on the other hand, be carried on side by side with the other observations of meteorological phenomena, as pressure, temperature, humidity, &c., with any of which it is of equal importance, and having once been admitted into the general routine of meteorological observations it must be kept on. This fact was soon seen on Ben Nevis from the extraordinary variations that were observed in the dustiness of the air with changes of weather; and it was attempted to make continuous hourly observations of the dust as of the other elements. It was found, however, that this could not be done without crippling the general routine, this being as much as the two observers at the Observatory could well cope with. In February 1891